

Dear Client

Welcome to the future of fitness and lifestyle analysis! With genetic profiling you can at last discover some of your body's metabolic secrets through a better understanding of some key genes in your genetic "blueprint". You can use the genetic information provided in this report to improve the effectiveness of your diet and training regime.

A *GeneElite*™ genetic profile provides INSIGHT, initiates PLANNING and improves PERFORMANCE.

### Insight

Enclosed in this diary is your fitness and lifestyle analysis based on your personal *GeneElite* genetic profile. Our laboratory has analysed a panel of fifteen key fitness and lifestyle genes and reported the particular variations you possess. Each gene analysed has several variations (called alleles), and it's the combination of allelic variations that define your particular physiology. This genetic information will provide your fitness professional with key information that will enable more informed choices about the direction your training should take to achieve best results.

### Planning

The more objective information you have about your body, the better you are able to plan how to achieve your goals. For example, if your goal is to lose body fat, then knowing how your body metabolises fat can help you attain that goal. The *GeneElite* report provides direction, but you may wish to talk to your trainer or dietician about tailoring your existing health and fitness program now that you have a better understanding of how your body is genetically geared to burn fat.

### Performance

By refining your program with the support of your health and fitness professional you capitalise on your genetic advantages whilst targeting and compensating for your genetic challenges. This can greatly improve the performance of your training and diet and allow you to reach your goals faster.

We know you will find this analysis to be a valuable and permanent insight into achieving your desired results.

The Excelgene Team

## Gene Groups Assessed in Your Report

### **BODY FAT METABOLISM**

This section gives you an understanding of how well your body metabolises fat as well as your predisposition to insulin resistance, which can lead to type II diabetes. The results will assist you in determining which type of exercise will be most effective in helping you burn or maintain body fat and avoid insulin resistance.

### **LEAN BODY MASS DEVELOPMENT**

Lean Body Mass Development describes more than just muscle, and includes the organs and bone. This section does not directly relate to muscle growth (hypertrophy). Having a *Poor* rating does not indicate you cannot build muscle. It represents your body's natural potential at a cardiovascular level, tolerance to anaerobic exercise (lactate build up) and bone density maintenance, all of which influence muscle growth and health.

### **RECOVERY**

The Recovery section indicates your susceptibility to inflammation. If you are new to exercise then a *Poor* or *Average* rating provides a flag for you to be aware of your body's predisposition to longer durations of inflammation and free radical production. The training section provides strategies to help you minimise inflammation and free radical damage.

### **NUTRITION**

This nutrition section looks at your liver's natural ability to flush out toxic waste known also as xenobiotics. Reduced free radical production and good detoxification will improve your general well being.

# GeneElite

## Fitness Profile Report

Client Identification Number

Date of test

### Group 1

**Body Fat Metabolism** **POOR**

Lipid Metabolism and Insulin Sensitivity

ADRB-2	PPAR $\gamma$ 2
Variation	Normal

### Group 2

**Lean Body Mass Development** **EXCELLENT**

Cardiovascular Health, Muscle Health and Bone Density

ACE	eNOS-3	MTHFR	HIF-1	MCT-1	Col1A1
Normal	Normal	Normal	Variation	Normal	Variation

### Group 3

**Recovery** **AVERAGE**

Inflammation and Antioxidation

TNF $\alpha$	IL-6	MnSOD	CYP1A1
Normal	Normal	Variation	Variation

### Group 4

**Nutrition** **AVERAGE**

Detoxification

CYP1A1	GSTT1	GSTM1	GSTP1
Variation	Variation	Normal	Normal

I hereby certify that the DNA used in the above tests has been destroyed.



Dr Valin Reja

Molecular Biologist

## Understanding your results

Your profile report is segmented into four groups of related gene functions. Each group is given an overall rating of *Poor*, *Average*, *Good* or *Excellent*. The ratings system is detailed below. Ratings provide a quick reference to understanding your physiological strengths and weaknesses. In reading your profile it is important that you take your exercise and nutritional habits into account too. If your diet and exercise regime is appropriate for your physiology, then you have implemented an effective guard against health risks such as cardiovascular disease, obesity and Type II diabetes for example.

*Poor* or *Average* ratings flag areas of your profile to which you should pay special attention and to question your current lifestyle habits surrounding the area profiled. For example if you have a poor to average body fat metabolism rating, and you are overweight, this is a prompt to discuss exercise and nutrition strategies with your fitness or nutrition professional. If you have a poor nutritional rating, you may wish to review your nutritional intake with your fitness or nutritional professional and ensure you have an effective plan.

Do not be discouraged by a *Poor* rating—the result is a genetic reality to which you can respond. By knowing your genetic limitations you can make effective decisions for the rest of your life that will add up to significant health and longevity benefits overall. Ultimately, this is a valuable outcome from a modest investment in gene profiling.

An *Excellent* rating is an advantage, however it is no immunity to the negative health implications of poor lifestyle choices. An *Excellent* result means you have some potential physiological advantages over the general population, but you will only reap any benefits after due effort.

Remember to read your gene diary to gain further insight into what each gene variations means at a physiological level. You should link your rating with your current lifestyle and history of diet and exercise. If you have specific concerns about your health you should consult your health professional.

## Allelic variations

Different versions of the same gene are called alleles. It's these allelic variations can have a positive or negative impact. If you have a variation in any of the genes tested, it is shown on your report in either green or blue. Green indicates a positive variation and blue indicates a negative variation. An allele is considered “normal” according to convention in the scientific literature.

## Overall ratings

**POOR:** A poor rating indicates that you have several variations within your genetic profile associated with less efficient fitness or nutritional performance. You should review your rating in combination with your fitness and nutritional assessment conducted by your trainer/nutritional advisor. Having a poor dietary or exercise history may result in a higher risk of health problems over the long term.

**AVERAGE:** You have some non-beneficial gene variants associated with less efficient fitness and nutrition. By reviewing the category with your fitness or health professional, you can target or incorporate new exercises and/or dietary recommendations to maximise your fitness and nutrition.

**GOOD:** You have some beneficial gene variants associated with more efficient fitness or nutrition. Genetically, categories with this rating may allow you to perform more efficiently than the general population within the specific category.

**EXCELLENT:** An excellent rating indicates you have the most beneficial combination of normal genes and positive allelic variations. This result places your genetic profile above the general population. When combined with optimised training and nutrition you have the potential to achieve superior fitness and associated health benefits easier than most people.

# Group 1: Body Fat Metabolism

## Lipid Metabolism and Insulin Sensitivity

### ADRB<sub>2</sub>

Beta-2 Adrenergic Receptor  
Lipid Metabolism

The human body is composed of a variety of different tissue types. The so-called 'lean' tissues, such as muscle, bone, and organs are metabolically very active, while fat tissue is much less active. The minimum percentage of body fat considered safe and acceptable for good health is 5% for males and 12% for females. The average adult body fat is closer to 15–18% for men and 22–25% for women. The metabolism of fat is more pronounced in females than in males. Once men creep up over about 25% and women over about 32%, there is a direct correlation with illness and disease.

Molecules such as adrenaline activate the breakdown of fats. These molecules are influenced by exercise and so regulate body weight. Adrenaline works by activating a molecule called the beta-2 adrenergic receptor (ADRB<sub>2</sub>).

The *GeneElite* test detects a negative variation in the ADRB<sub>2</sub> gene. The variation is associated with reduced fat burning during exercise, higher BMI<sup>1</sup> and accumulation of body fat. The negative variation is present in about 20% of the population.

### PPAR<sub>γ2</sub>

Peroxisome Proliferator-Activated Receptor gamma-2  
Insulin Sensitivity

Visceral fat is found deep in the abdomen and surrounding organs. Visceral fat is metabolised into free fatty acids, which travel to the liver to be converted into cholesterol. If the amount of fatty acids in the liver is too high it can result in an over production of cholesterol or lead to insulin resistance. An over production of cholesterol can lead to blockage of blood vessels and a high risk of cardiovascular disease.

Insulin resistance can lead to the onset of Type II diabetes. In this form of diabetes insulin is produced, however, it is ineffective in allowing glucose to be taken up into the surrounding cells and results in hyperglycaemia (an abnormally high level of glucose in the blood).

Both the over-production of cholesterol and insulin resistance are associated with obesity, which is defined as a high level of visceral fat and a BMI<sup>1</sup> greater than 30.

PPAR<sub>γ2</sub> plays a key role in regulating fat metabolism and insulin sensitivity (glucose turnover). PPAR<sub>γ2</sub> activity in visceral fat causes a significant mobilisation of fatty acids into blood vessels that travel to the liver. In obese individuals with higher levels of visceral fat, correspondingly higher levels of fatty acids are mobilised. This can lead to the onset of Type II diabetes and/or cardiovascular disease.

The *GeneElite* test detects a positive variation resulting in reduced PPAR<sub>γ2</sub> gene activity. Reduced activity may lessen the risk of Type II diabetes and/or cardiovascular disease (due to lower levels of fatty acid mobilisation to the liver). Approximately 30% of the population have the positive variation.

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<sup>1</sup> Body Mass Index (BMI) is the relationship between height and body weight which is associated with body mass and health risk. The equation is: BMI = weight (in kilograms) / (height [in metres])<sup>2</sup>. Guidelines for BMI can be found on many internet sites (e.g. [www.halls.md](http://www.halls.md)).

## Training Guide

### Group 1: Body Fat Metabolism

**Note** Information and suggestions contained here are guidelines only and should be used in conjunction with a supervised fitness and nutritional program.

If you have a variation in the ADR $\beta$ -2 gene, your body is genetically slower at oxidising body fat. You should consult with your trainer or nutritionist about how to increase your metabolism, as outlined in the Training Guide section on Lean Body Mass Development. Weights or resistance programs will assist in raising your metabolism for longer periods than cardiovascular training.

Having a *Good* or *Excellent* Lean Body Mass Development rating indicates that training programs stimulating muscle (weights or resistance training) will help compensate for poor fat burning ability. Lean muscle is metabolically more active and will be beneficial in assisting your body to oxidise fat (refer to the Lean Body Mass Development section for more details).

A balanced diet low in saturated fats will aid in body fat reduction. Programs involving cardiovascular training will also be beneficial to general health. If you have a *Poor* or *Average* Lean Body Mass Development rating you will nevertheless benefit from exercise. A balanced diet combined with cardiovascular and resistance training will reduce body fat. However, more time may be required to achieve results so some patience and persistence will be required.

Possessing the normal gene for PPAR $\gamma$  in overweight individuals indicates a risk factor for insulin resistance or Type II diabetes. Individuals with high amounts of abdominal fat (indicating high amounts of visceral fat) are at greater risk. Measuring your hip to waist ratio is a quick way to determine if you carry excess abdominal fat. Individuals are strongly recommended to lower their intake of saturated fats and undertake a body fat loss program to reduce the associated risks.

If you received an *Excellent* or *Good* Body Fat Metabolism rating, your body is geared towards efficient fat burning. It also suggests your risk of insulin resistance may be lower due to slower movement of visceral fat to the liver.

Cardiovascular training programs will be beneficial for *Good* to *Excellent* ratings. Ideal aerobic training is around 60-80% MHR<sup>2</sup> for 20-60 minutes, 3-5 times a week.

#### Example Aerobic Programs

1. Exercise Bike: 20-60 minutes at 60-80 % of your MHR. This exercise is beneficial if you are overweight as it reduces mechanical loading on your back and knees, especially for those with low fitness levels.
2. Treadmill or Cross Trainer: 20-60 minutes 60-80% MHR. Cross-trainers assist in lowering mechanical stress on the back and legs. This is effective for individuals who may be overweight. You should also refer to your recovery profile as poor recovery can influence joint inflammation. (See the Recovery section)
3. Rowing machine: 20-30 minutes at 40 strokes per minute. An excellent form of aerobic exercise. This will also help develop upper body strength. Have your personal trainer monitor your technique to ensure correct ergonomics.

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<sup>2</sup> MHR= Maximum Heart Rate in beats per minute (To calculate subtract your age from 220)

# Help Sheet

## Group 1: Body Fat Metabolism

### Body Fat Metabolism Diary

Date					
BMI					
% Body Fat					

To determine % of Body Fat, ask your personal trainer or GP for assistance.

### Dietary recommendations

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### Exercise recommendations

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